

Module 1: Section 1D: A Closer Look at the Standards for Mathematical Content: Third Grade Sample Tasks

Task1:

• Presley has 18 markers. Her teacher gives her three boxes and asks her to put an equal number of markers in each box.

• Anthony has 18 markers. His teacher wants him to put 3 markers in each box until he is out of markers.

a. Before you figure out what the students should do, answer these questions:

Presley has 3 boxes to put her markers in.

What is happening in these two situations? How are they similar? How are they different?

- Presley is putting markers into boxes equally. d= Anthony has to put 3 markers into boxes, and boxes

- Anthony is putting 3 markers into boxes. both are putting 18 markers into

b. Figure out how many markers Presley should put in each box. Show your work. Then figure out how many boxes Anthony should fill with markers. Show your work.

6 6 6 = 18 $3 \times 6 = 18$

$18 \div 3 = 6$

$9 \times 2 =$

18

6 6 6

6 6 6 6 6 6

18 $6 \times 3 = 18$

Distributive property

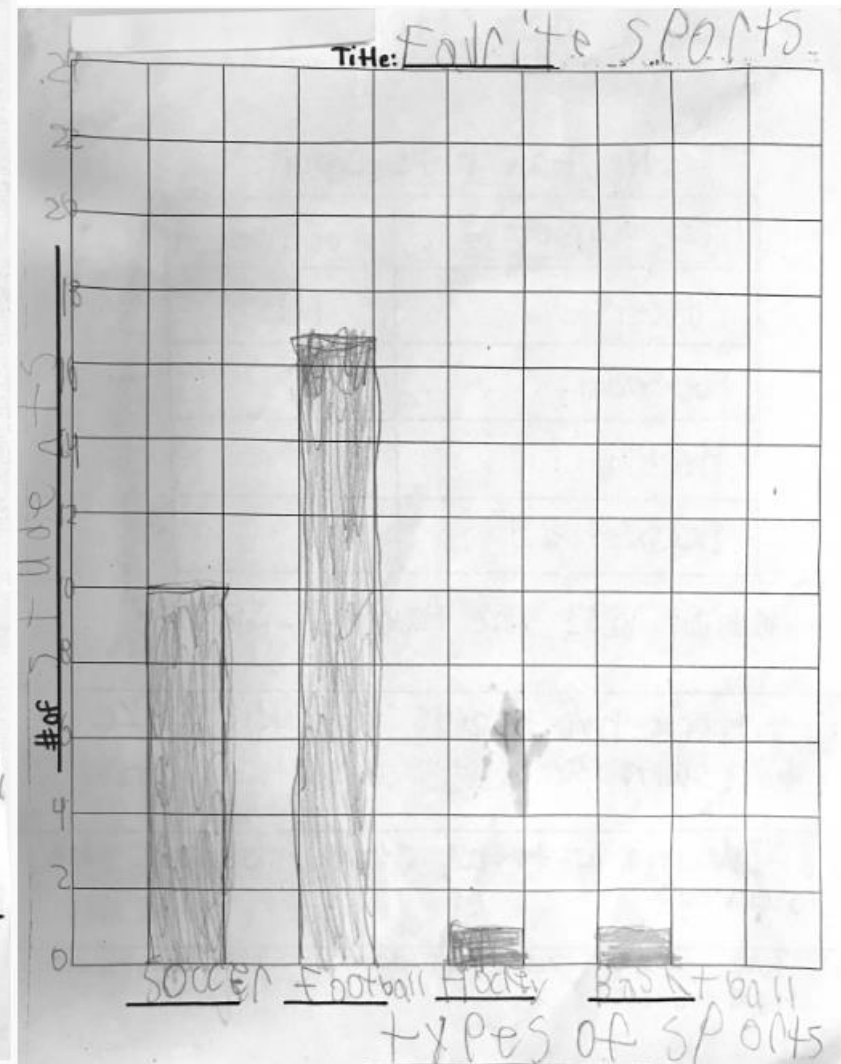
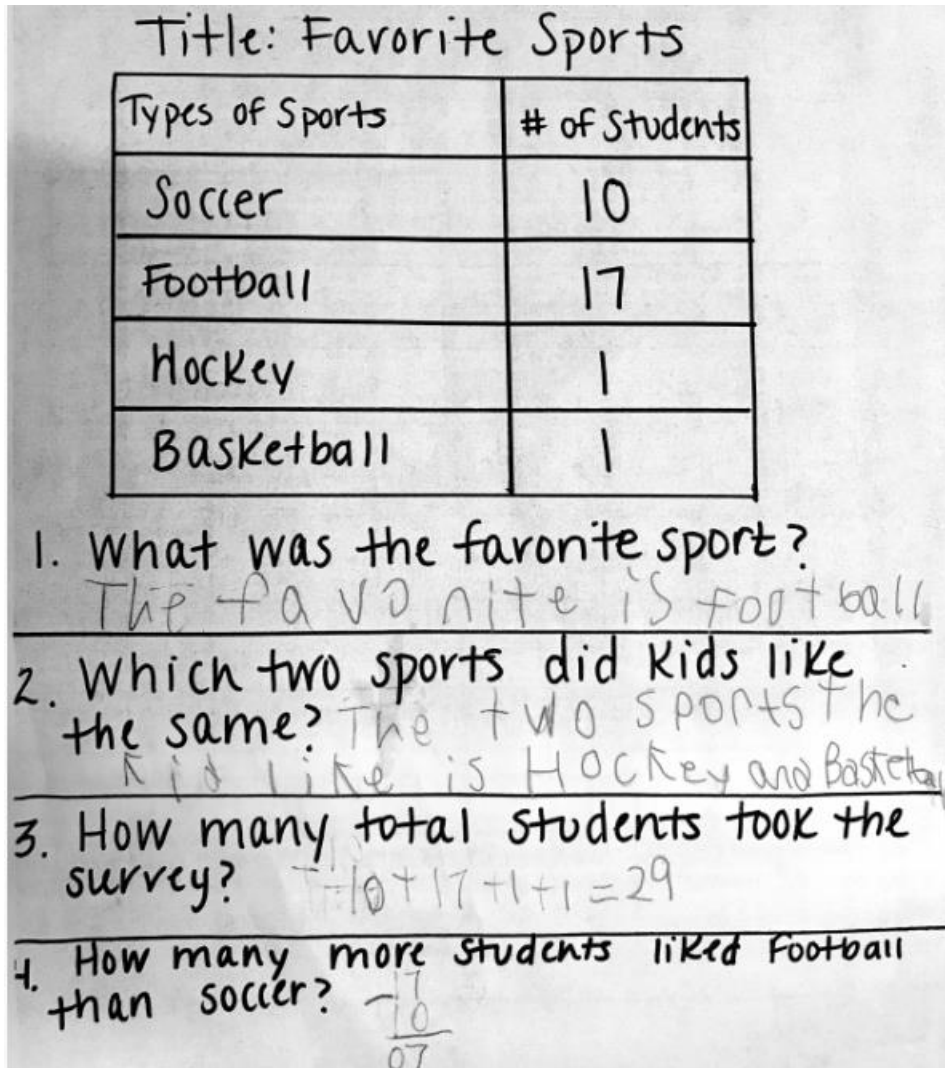
3 3 3 3 3 3

6 6 6

6 + 6 + 6 = 18

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Task 2:



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Task 3:

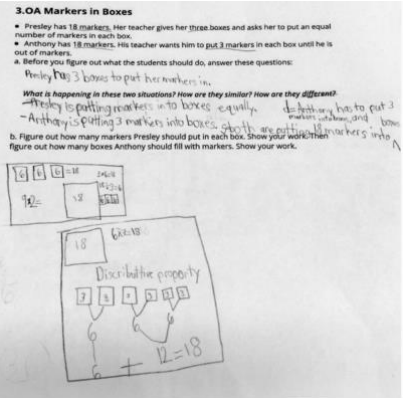
Write the Correct Comparison S

1)	$\frac{1}{2}$	\square	$\frac{3}{5}$
2)	$\frac{1}{2}$	\square	$\frac{1}{4}$
3)	$\frac{5}{7}$	\square	$\frac{2}{8}$
4)	$\frac{3}{7}$	\square	$\frac{1}{3}$
5)	$\frac{3}{4}$	\square	$\frac{1}{6}$
6)	$\frac{1}{8}$	\square	$\frac{6}{8}$
7)	$\frac{1}{5}$	\square	$\frac{4}{7}$
8)	$\frac{4}{7}$	\square	$\frac{1}{5}$
9)	$\frac{2}{3}$	\square	$\frac{2}{4}$
10)	$\frac{2}{7}$	\square	$\frac{4}{6}$

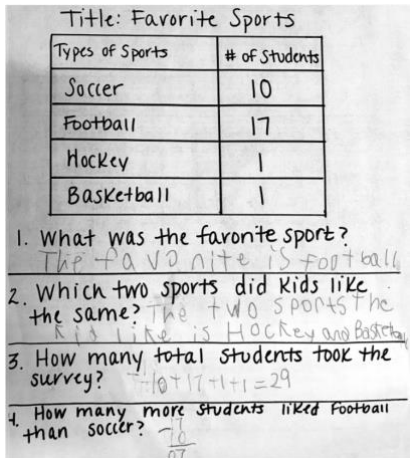
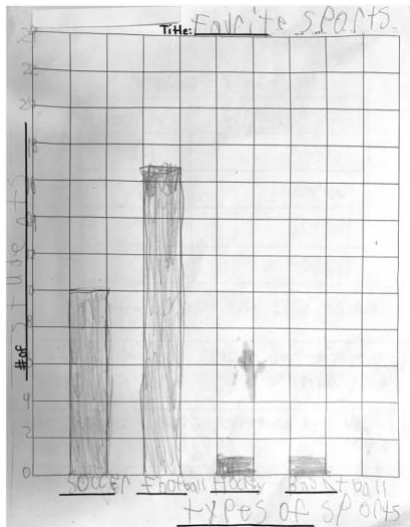
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Participant Guide

Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
<p>Sample Task 1:</p>  <p>3.OA Markers in Boxes</p> <p>• Presley has 18 markers. Her teacher gives her three boxes and asks her to put an equal number of markers in each box.</p> <p>• Anthony has 18 markers. His teacher wants him to put 3 markers in each box until he is out of markers.</p> <p>a. Before you figure out what the students should do, answer these questions:</p> <p>Presley has 3 boxes to put her markers in.</p> <p>What is happening in these two situations? How are they similar? How are they different?</p> <p>Anthony is putting markers in 3 boxes equally. Presley has to put 3 markers in each box.</p> <p>Anthony is putting 3 markers into boxes. Anthony is putting 3 markers into boxes.</p> <p>b. Figure out how many markers Presley should put in each box. Show your work.</p> <p>Figure out how many boxes Anthony should fill with markers. Show your work.</p> <p>Diagram: 3 boxes, each with 6 markers. Equation: $3(6) = 18$.</p> <p>Distributive property: $3(6) = 18$.</p>	<p>Can you identify the targeted content standard(s) for this task?</p>	<ul style="list-style-type: none"> • None/Weak • Partial • Strong 	<p>Can you identify the targeted practice standard(s) for this task?</p>

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Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
<p>Sample Task 2:</p>  	<p>Can you identify the targeted content standard(s) for this task?</p>	<ul style="list-style-type: none"> • None/Weak • Partial • Strong 	<p>Can you identify the targeted practice standard(s) for this task?</p>

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Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
<p>Sample Task 3:</p> <p>Write the Correct Comparison S</p> <p>1) $\frac{1}{2}$ <input checked="" type="checkbox"/> $\frac{3}{5}$</p> <p>2) $\frac{1}{2}$ <input checked="" type="checkbox"/> $\frac{1}{4}$</p> <p>3) $\frac{5}{7}$ <input checked="" type="checkbox"/> $\frac{2}{8}$</p> <p>4) $\frac{3}{7}$ <input checked="" type="checkbox"/> $\frac{1}{3}$</p> <p>5) $\frac{3}{4}$ <input checked="" type="checkbox"/> $\frac{1}{6}$</p> <p>6) $\frac{1}{8}$ <input checked="" type="checkbox"/> $\frac{6}{8}$</p> <p>7) $\frac{1}{5}$ <input checked="" type="checkbox"/> $\frac{4}{7}$</p> <p>8) $\frac{4}{7}$ <input checked="" type="checkbox"/> $\frac{1}{5}$</p> <p>9) $\frac{2}{3}$ <input checked="" type="checkbox"/> $\frac{2}{4}$</p> <p>10) $\frac{2}{7}$ <input checked="" type="checkbox"/> $\frac{4}{6}$</p>	<p>Can you identify the targeted content standard(s) for this task?</p>	<ul style="list-style-type: none"> • None/Weak • Partial • Strong 	<p>Can you identify the targeted practice standard(s) for this task?</p>

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Facilitator's Guide

Throughout facilitation of this activity it will be important to remind participants:

- Use the grade-level overview to determine the relevant cluster(s) to look at more closely
- Questions regarding Standards for Mathematical Practices will only be indicated where specific practices were identified within the source of the task alignment. Additionally, emphasize to participants the statement at the end of each cluster within the *KAS for Mathematics*, “The identified mathematical practices, coherence connections, and clarifications are possible suggestions; however, they are not the only pathways.”

Sample Task 1:

This assignment is **strongly aligned** to the standards.

OVERVIEW

Third-grade students interpret and solve two division word problems. This assignment is strong because it builds students' conceptual understanding of division by asking them to explain what is happening in two similar but different real-world scenarios and to use visual models to solve both problems.

RELATED STANDARDS

We looked at how well the assignment aligned to the following standards:

KY.3.OA.2 Interpret and demonstrate whole-number quotients of whole numbers, where objects are partitioned into equal shares.

KY.3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, by using drawings and equations with a symbol for the unknown number to represent the problem.

WHY IS THIS ASSIGNMENT STRONGLY ALIGNED?

This assignment is well-aligned with both target third-grade standards:

KY.3.OA.2 requires students to interpret quotients in two scenarios and the assignment includes both. In problem 1, students find the unknown group size, and in problem 2, they find the unknown number of groups.

KY.3.OA.3 requires students to solve division problems in the context of word problems, and the assignment includes two word problems about putting markers in boxes. The numbers used (dividing 18 by 6 and 3) are also appropriate because third-graders should be working on dividing whole numbers within 100.

This assignment addresses conceptual understanding and application. Third grade is the first year that students begin studying multiplication and division in depth, and a huge focus of third grade math instruction is developing students' conceptual understanding of these operations so that they're able to tackle more advanced work with multiplication and division in future grades. For example, students must understand that division represents splitting a set of objects into equal groups and division problems can require either finding the unknown number of groups or the unknown group size. Asking students to interpret and Please note that inclusion of these sample tasks does not represent that this task is endorsed by or rejected by the Kentucky Department of Education. Inclusion of these tasks was for the sole purpose of allowing participants the opportunity to investigate the content standards within the *Kentucky Academic Standards for Mathematics* more closely. All tasks were selected from <https://tntp.org/student-work-library>.

explain what is happening in the two scenarios in the assignment gives them a chance to build that conceptual understanding. The word problem format also allows students to apply that mathematical understanding to a real-world situation.

Practice Standards

This assignment allows students to engage with multiple mathematical practice standards. Interpreting what is happening in both scenarios gives students the chance to engage with [Mathematical Practice Standard #1](#) ("Make sense of problems and persevere in solving them"). Representing the real-world topic (number of markers in boxes) mathematically with drawings gives students the chance to engage with [Mathematical Practice Standard #4](#) ("Model with mathematics"). Asking students to explain how the two scenarios are similar and different gives students the chance to engage with [Mathematical Practice Standard #3](#) ("Construct viable arguments and critique the reasoning of others").

Sample Task 2:

This assignment is [partially aligned](#) to the standards.

OVERVIEW

Third-grade students answer questions about a data set and draw a bar graph to represent the data set. This assignment gives students a chance to model a real-world situation (students' favorite sports) mathematically, but it is only partially aligned with a third-grade standard and does not connect to any of the main topics that students should be learning about in third grade.

RELATED STANDARDS

We looked at how well the assignment aligned to the following standard:

[KY.3.MD.3](#): Investigate questions involving categorical data.

- a. Identify a statistical question focused on categorical data and gather data;
- b. Create a scaled pictograph and a scaled bar graph to represent a data set (using technology or by hand);
- c. Make observations from the graph about the question posed, including "how many more" and "how many less" questions.

WHY IS THIS ASSIGNMENT PARTIALLY ALIGNED?

This assignment is partially aligned with third-grade standard [KY.3.MD.3](#). Students draw a bar graph to represent a data set with four categories (soccer, football, hockey, and basketball), which aligns with the "several" categories the standard calls for. The bar graph is scaled appropriately for third grade (the scale is two units, compared to the second-grade standard [KY.2.MD.10](#) that only requires bar graphs with a single-unit scale). However, the third-grade standard also requires students to solve one- and two-step "how many more/less" problems about the data set. Only one of the four problems in this assignment is a one-step "how many more" problem, and there are no two-step problems. The first three questions are more closely aligned with first-grade standard [KY.1.MD.4](#) and second-grade standard [KY.2.MD.10](#).

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The critical areas for third grade include solving problems with all four operations—adding and subtracting within 1000 and multiplying and dividing within 100. The type of addition and subtraction that students were asked to do in this assignment (adding $17+10+1+1=29$ and subtracting $17-10=7$) is below grade level.

Practice Standards

This assignment connects math to a real-world topic (students' favorite sports) and representing the real-world topic mathematically with a bar graph gives students the chance to engage with [Mathematical Practice Standard #4](#) ("Model with mathematics").

Sample Task 3:

This assignment is **weakly aligned** to the standards.

OVERVIEW

Third-grade students compare fractions with different numerators and/or different denominators. This assignment is weak because it only requires students to procedurally complete the comparisons and is therefore more closely aligned to a fourth-grade standard; it doesn't help build a conceptual understanding of fraction size that third-graders need as a foundation for future work with fractions.

RELATED STANDARDS

We looked at how well the assignment aligned to the following standard:

[KY.3.NF.3](#): Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

- [KY.3.NF.3.d](#): Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $<$, $=$, or $>$, and justify the conclusions.

Note: grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6 and 8.

WHY IS THIS ASSIGNMENT WEAKLY ALIGNED?

This assignment is more closely aligned with a fourth-grade standard. The third-grade standard [KY.3.NF.3](#) calls for comparing two fractions with different numerators or different denominators, but only three of the ten problems (#2, 6, 9) fit that description. The other seven problems involve comparing two fractions with different numerators and denominators, which more closely aligns with fourth-grade standard [KY.4.NF.2](#).

This assignment doesn't help students build conceptual understanding, which is required by standard [KY.3.NF.3](#). Third grade is the first year that students begin seeing fractions as numbers, and a huge focus of third grade math instruction is developing students' conceptual understanding of fractions so that they're able to tackle more advanced work with fractions in future grades. For example, students must understand that the size of a fractional part depends on the size of the whole. To help students gain this foundational understanding, fractions are represented not only numerically but also visually and physically (for example, drawing fraction models or using fraction manipulatives). In this assignment, fractions are only represented numerically.

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Practice Standards

This assignment doesn't allow students to engage with any mathematical practice standards. Standard [KY.3.NF.3](#) calls for students to reason about fraction sizes and justify their conclusions, which is aligned with [Mathematical Practice Standard #3](#) ("Construct viable arguments and critique the reasoning of others"). In this assignment, students have to fill in inequality symbols but aren't asked to explain their answers.

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